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PROGRESS

of the

Barberry Eradication Campaign

in

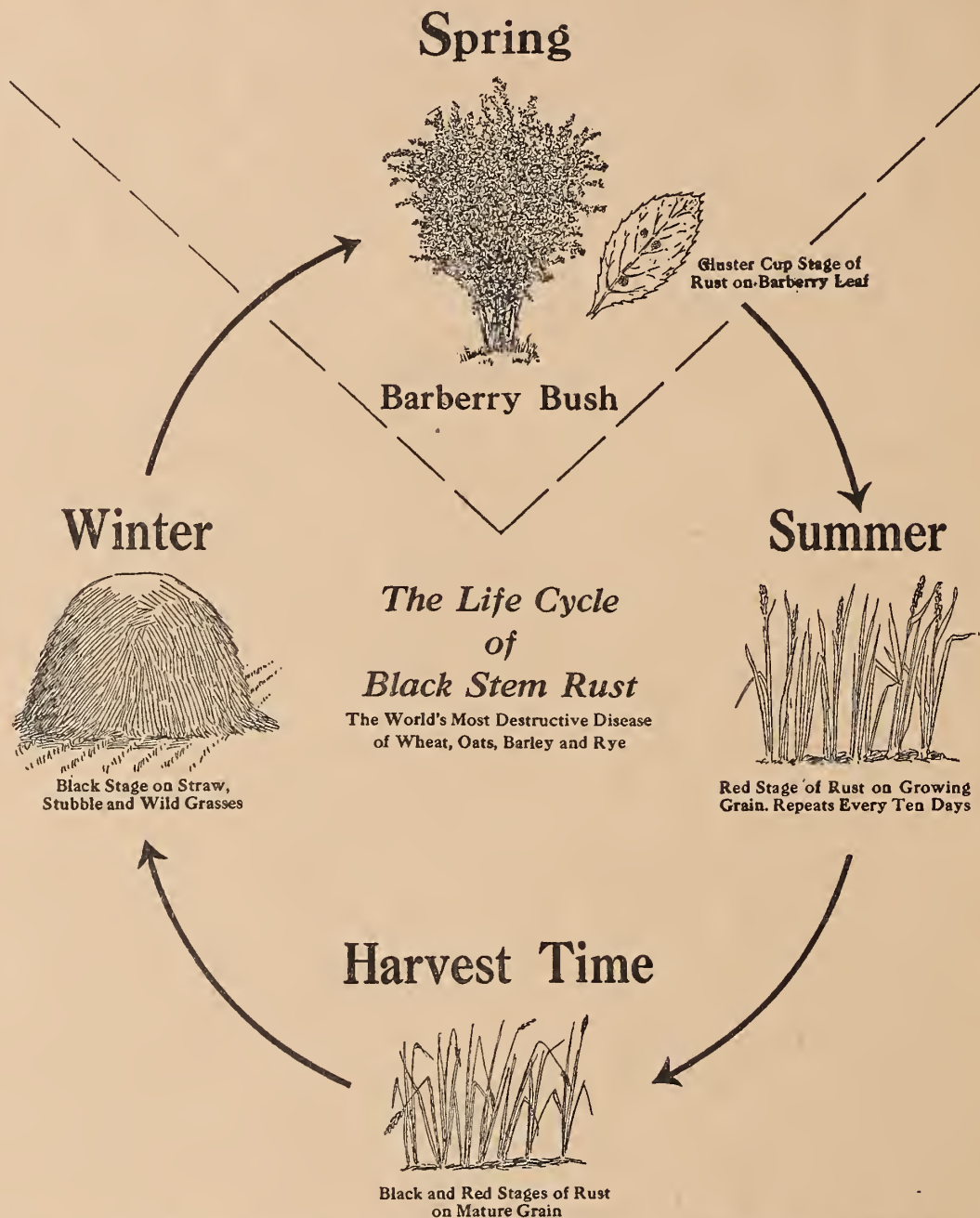
MICHIGAN in 1929



Our Grain Crops Must Be Protected from Black Stem Rust

Barberry Eradication Pays

Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

**BOOST BARBERRY ERADICATION—A PRACTICAL RUST
CONTROL MEASURE**

PROGRESS OF THE BARBERRY-ERADICATION CAMPAIGN

IN MICHIGAN, 1929

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Office of Cereal Crops and Diseases, 2/ Bureau of Plant Industry,

U. S. Department of Agriculture

Introduction

The destructive black stem rust of oats, wheat, barley, and rye spreads from the common barberry bush (Perberis vulgaris L.). Black stem rust is the most destructive fungous disease that attacks small grains. Barberry eradication will eliminate all the spore material of stem rust which gets its start from the barberry in the spring. Michigan farmers every year lose approximately a million dollars' worth of small grains because of black stem rust, and they will continue to suffer such losses until the common barberry has been eradicated.

Every one should learn to recognize and report all common barberry bushes. The barberry is a tall erect shrub, often growing to a height of 12 feet. The outer bark is grayish, and the inner bark is yellow. The roots have a very marked yellow color. Spines occur along the stems, usually in groups of three or more. The leaves grow in clusters, are green or purple in color and have saw-toothed edges. The yellow flowers and red berries are borne in bunches like those of currants.

The Japanese barberry (Berberis thunbergii DC.) does not spread rust and should not be disturbed. It is not only harmless but is a beautiful shrub.

Organization and Personnel of the Barberry Eradication Campaign

The campaign in Michigan has been conducted cooperatively by the United States Department of Agriculture, the State Agricultural College, the Conference for Prevention of Grain Rust of Minneapolis, and other agricultural and commercial agencies. Headquarters for the campaign in Michigan are at the Botany Department at Michigan State College, East Lansing.

Field agents are chosen for the eradication of the common barberry principally on account of their acquaintance with plant-disease control methods and are thoroughly trained in a barberry school before they begin work.

1/ Formerly State Leader of barberry eradication in Michigan

2/ From the beginning of the campaign in 1918 until January 1, 1930,, barberry eradication was a project of the Office of Cereal Crops and Diseases, of the Bureau of Plant Industry. On January 1, 1930, the Office of Barberry Eradication was established as a separate unit of the Bureau.

Financing

Most of the funds for the barberry-eradication campaign in Michigan have been supplied by the Federal Government, the United States Department of Agriculture having furnished approximately 87 per cent of the actual cash. The State, through its Department of Agriculture, has contributed the balance.

Other cooperating agencies have rendered valuable indirect assistance in offering office and storage space and supplying printed and illustrative materials. Members of the State College, the Extension Staff, and the State Department of Agriculture by their personal services have aided materially in conducting the campaign.

Surveys for Common Barberry Bushes

The first survey for common barberry bushes in Michigan was begun in 1918. The nurserymen of the State gave their whole-hearted cooperation by voluntarily destroying the thousands of bushes on hand that were intended to be sold for ornamental purposes. Rust spreads from common barberry to oats and wheat were found in nearly every county. In most cases stem-rust attacks were traced to common barberry bushes within reasonably close proximity.

This first survey was extended in 1920 to the rural sections of the lower tier of counties. The survey then progressed to the northern counties. Farmsteads were visited, and the vegetation around the farm buildings was searched for common barberry bushes. No inspection was made of adjacent groves, orchards, fence rows, or native woods, unless fruiting bushes were found on the farmstead.

In 1926 a more thorough type of survey was adopted for the rural sections. Manistee and Wexford Counties and others in the northern part of the lower peninsula are being covered by this more thorough survey. In the rapid survey first used a number of counties were covered in a reasonably short period of time. A large number of bushes were destroyed, thus preventing rust spreads and eliminating the possibility of further seed distribution. The more thorough type of survey demands that more time be given to each county. Freedom from stem rust after the removal of the bushes is the reward for the extra time expended.

An annual resurvey was conducted during the period from 1921 to 1925, inclusive, in counties previously first surveyed, to determine whether sprouts or seedlings had sprung up.

The 13 principal grain-growing States of the North and Northwest are gaged in this campaign, namely, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Nebraska, South Dakota, North Dakota, Montana, Wyoming, and Colorado. Michigan already has located within her borders more barberry bushes and seedlings than any one of the other States engaged in barberry eradication.

BLACK STEM RUST SPREADS FROM COMMON BARBERRIES



to Wheat, Oats, Barley, Rye and other Grasses.

Black Stem Rust as it appears on the leaves of the Common Barberry



Enlarged single leaf



Plump healthy grain



Shriveled rusted grain

DANGEROUS NEIGHBORS

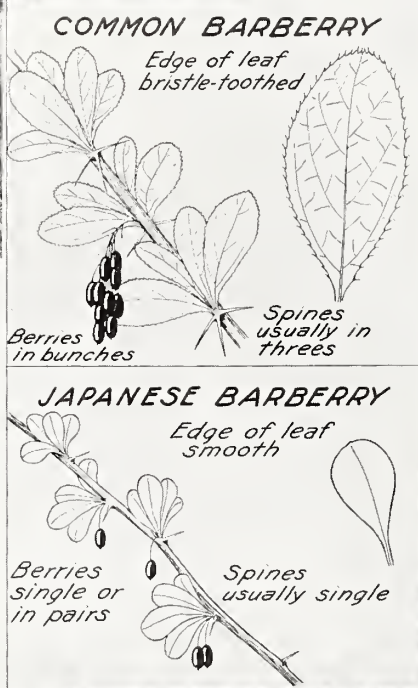


Common Barberry Bushes growing near grain fields

Report Common Barberry bushes you may find to your State Leader of Barberry Eradication.



Common Barberry is harmful, destroy



Japanese Barberry is harmless, do not destroy





FLOWERS
(yellow)



BERRIES
(bright red)

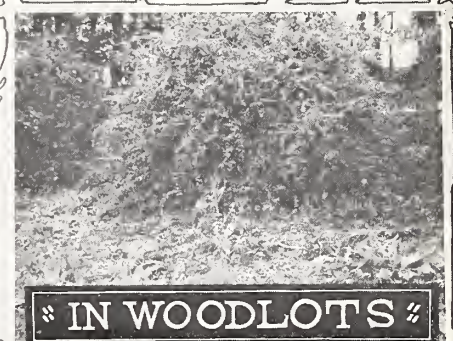
Where Barberry Bushes Grow



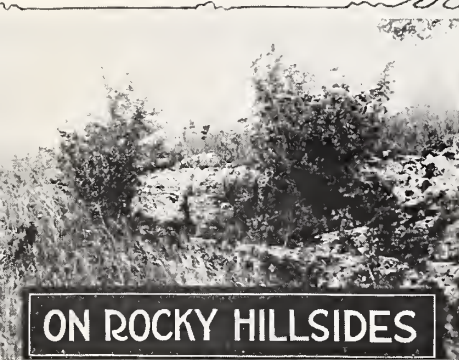
IN DOORYARDS



BIRDS CARRY BARBERRY SEEDS SEVERAL MILES, DROPPING THEM AMONG ROCKS AND IN OUT-OF-THE-WAY PLACES



IN WOODLOTS



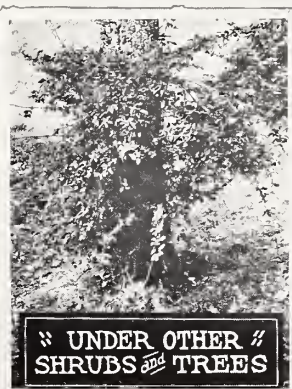
ON ROCKY HILLSIDES



Barberries spread by birds



AS HEDGE FENCES



UNDER OTHER
SHRUBS and TREES





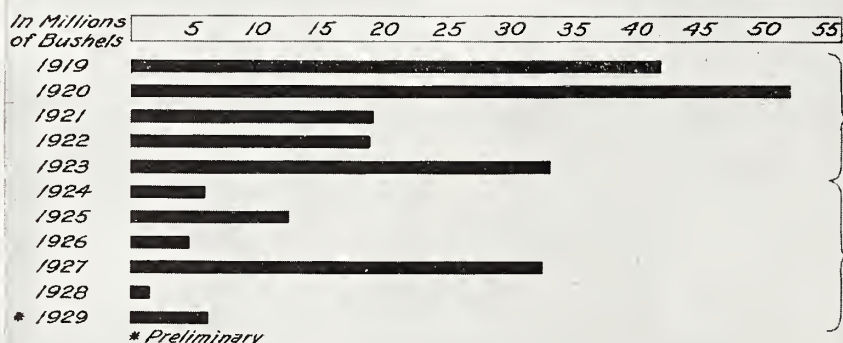
Salting a bush



Sprouts from a dug bush

Common Salt Kills Barberry Bushes and Prevents Sprouting

Wheat Losses in Barberry Eradication Area, 1919-1929



The average annual loss for the first five year period, 1919 to 1923, was approximately 33,000,000 bushels.

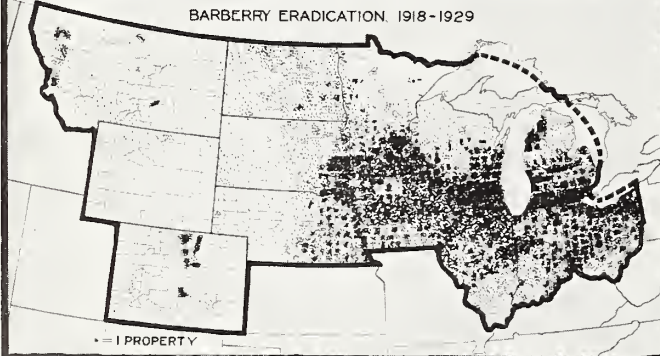
The average annual loss for the next six year period, 1924 to 1929, was approximately 10,500,000 bushels.

The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided barberry eradication in this reduction.

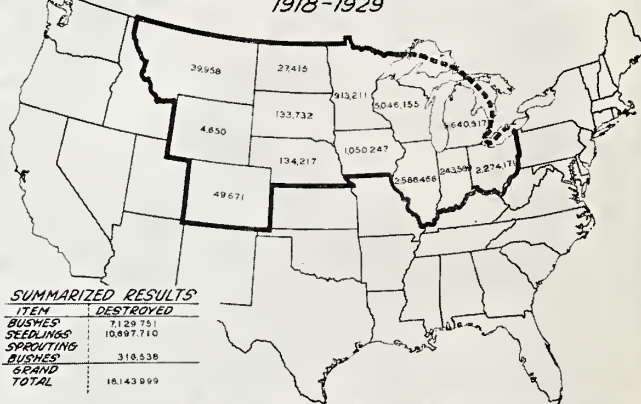
"BARBERRY ERADICATION PAYS"

RURAL PROPERTIES ON WHICH BARBERRY BUSHES WERE FOUND-ALL SURVEYS

BARBERRY ERADICATION, 1918-1929



NUMBERS OF BARBERRY BUSHES AND SEEDLINGS DESTROYED 1918-1929



All Known Methods of Rust Control Must Be Employed

While barberry eradication is of first importance, there are several known methods for reducing losses due to black stem rust. Early sowing of grain, proper preparation of the seed bed, avoidance of low, poorly drained land, proper use of fertilizers, in fact, anything that promotes early ripening of the grain, will help reduce the danger from rust.

Varieties of wheat, oats, and barley more disease resistant than others have been produced by plant breeders. Wherever these varieties meet the requirements of a given region and are desirable from the standpoint of yield, milling quality, and resistance to other cereal diseases, they should be substituted for the less satisfactory varieties.

New Strains of Destructive Black Stem Rust Develop on the Common Barberry

The production of rust-resistant varieties of grains probably will be much more successful, however, when all common barberry bushes have been eradicated. The reason for this is shown in the recent important discoveries made in the Canadian Rust Research Laboratories at Winnipeg and by E. C. Stakman and his co-workers at the University of Minnesota. Both of these groups conducting independent research have proved that entirely new strains of the destructive black stem rust are produced if two different forms of the rust cross-breed on the barberry leaves. The certainty that new forms of the dangerous disease may suddenly appear makes the eradication of the common barberry all the more imperative, since it is on the barberry alone that this crossing can occur in nature. The new and apparently resistant varieties of grains are not safe with barberries near. If for no other reason than to protect the new kinds of super-wheat which are now in the process of being developed, all common barberry bushes should be destroyed.

Summary of All Activities, 1929

Surveys

First survey was the major phase of the field activities in the barberry-eradication campaign for 1929. The 36 field agents found and eradicated 443,047 barberry bushes and seedlings on 72 different properties. The bushes were eradicated by the application of salt. Of the bushes and seedlings found, thousands were bearing seeds. Barberry seeds are eaten by birds and scattered to woodlots, along fence rows, and in other places where birds roost, feed, or go for water.

Educational and Publicity Activities

Educational and publicity activities again were emphasized this year.

The objects of the first activity are (1) to teach pupils and students in schools the distinguishing characteristics of the common barberry and its relation to stem rust, and (2) to obtain reports from them on the location of all bushes that they may find. Barberry literature, stem rust specimens, rusted barberry specimens, and study plans were supplied to 3,763 educational institutions.

Fifty-five news articles were published in weekly and daily newspapers. Stories were supplied to farm journals and the press associations. Approximately 55,000 bulletins and circulars and 75,000 other pieces of printed matter were sent to schools, farmers, and other interested persons during the year. Demonstrations were conducted at four fairs, and 25 window demonstrations were displayed.

Investigations

As in previous years, the presence of stem rust was closely checked. Some bushes overlooked in a previous survey have been located by rust attacks in fields of small grains.

Rather extensive experiments on the effect of salt and kerosene on barberry seeds and seedlings and on the natural death rate of seedlings were started in 1926, repeated in 1927, and continued in 1929. Likewise, experiments to determine the viability of barberry seeds and their response to certain chemicals, as well as to various environmental conditions, were started in 1928 and continued in 1929.

Conclusions

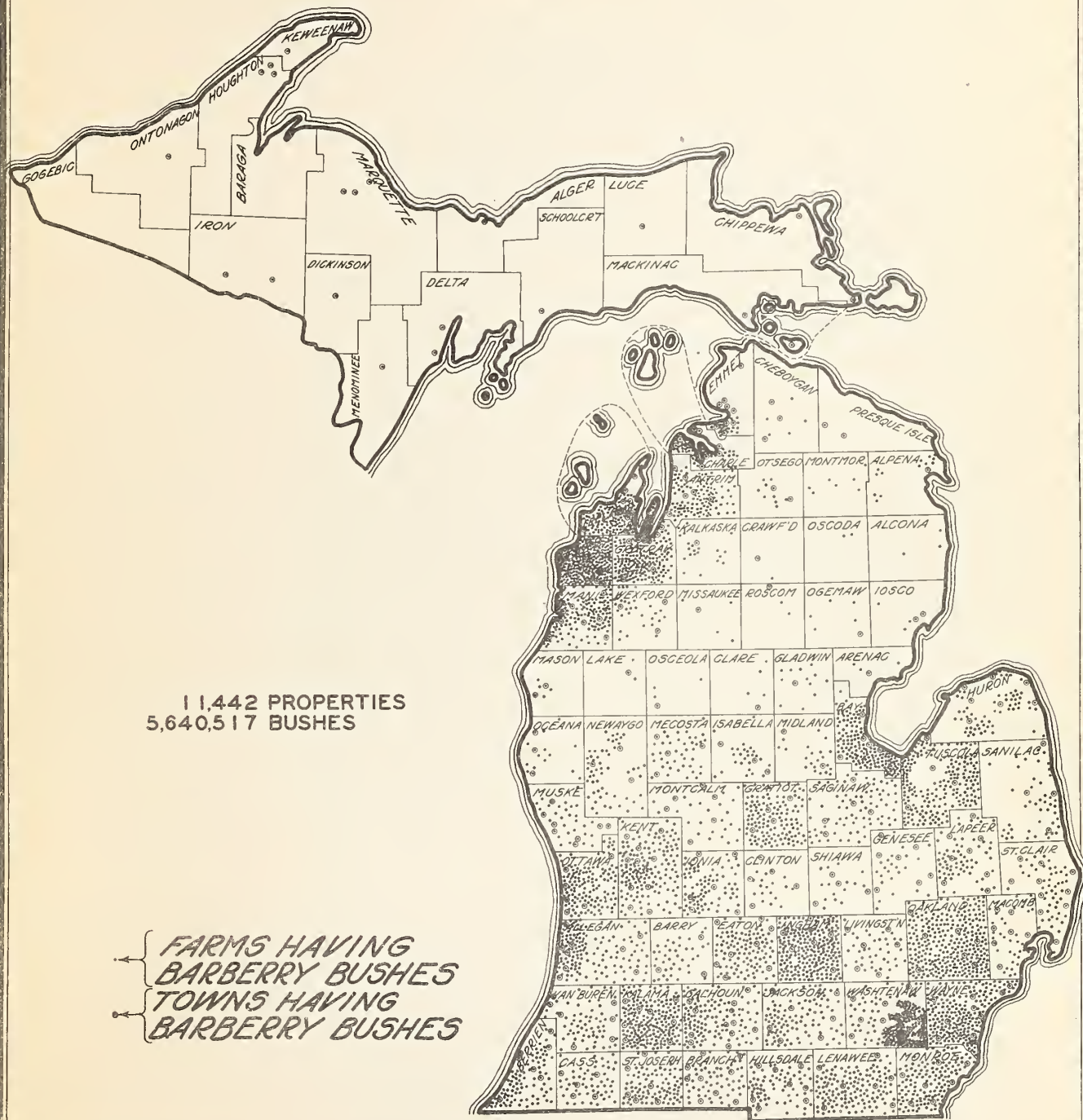
The common barberry is necessary for the completion of the life cycle of stem rust and spreads such rust to oats, wheat, barley, rye, and about 55 known grasses in Michigan. Unless the spread of barberry bushes in Michigan is checked, they will become so numerous that no grain field will be sufficiently removed to escape an attack of stem rust.

The removal of all common barberry bushes from Michigan is the cheapest insurance from heavy losses caused by black stem rust.

Every citizen of Michigan should assist in eradicating the common barberry by reporting the locations of all bushes to Office of Barberry Eradication, Michigan Agricultural College, East Lansing, Mich.

PROPERTIES HAVING BARBERRY BUSHES 1918-1929

MICHIGAN



Common Barberry Spreads Black Stem Rust

Know Common Barberry Look For It!

*When you find
a spiny bush
with-*

*Edges of leaves
like this*



Spines like these



Berries like these



Inner bark yellow



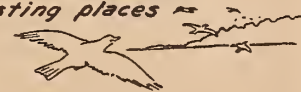
*It is a
Common Barberry
and should be
reported at once*

*Spread of
Barberries by
birds*

*Birds eat the
berries*



*Carry them to their
roosting places*



*Where they cough
up the seeds*



*From which seedling
bushes grow*



*They in time
bear fruit which
is again carried
farther on*

Look For and Report All Common Barberry Bushes

To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.

Common Barberry Bushes

spread

Black Stem Rust

to

WHEAT, OATS,
BARLEY, RYE,
and Many Wild
Grasses

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